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Industrial Color Seen as New Tool for Management

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One of the earlier applications of color to reduce glare and eyestrain was in the hospital field. A New York surgeon, Dr. P. J. Flagg, was concerned with the eyestrain and fatigue caused by glare in the conventional white operating room. The solution he developed, with the aid of one of the paint manufacturers, was "eye rest green," a soft green that is complementary in color to human tissue. From this modest beginning industrial color has grown until it now offers many new possibilities to management in meeting problems in personnel and production administration. Claimed results from experiments range from a modest 5.5 per cent increase in working efficiency to a drop of 70 per cent in accident rate and 60 per cent in rejects during the first week a color change was instituted in a shoe factory.

Industrial psychologists feel that many of the claims of the "color specialists" are fanciful, chiefly because their data have not been subjected to sufficiently rigid tests, although it is admitted that a basis does exist for some of their claims. One of the chief difficulties in the evaluation of the results of the use of color lies in the fact that the results gained by changes in illumination cannot be separated from those gained by color. The lighter colors recommended will increase the reflectance of walls, ceilings, and working areas, automatically increasing the illumination levels in the room. For industrial purposes, light and color must be regarded as Siamese twins and their interdependence accepted.

Color for Visibility and Contrast. One of the first requirements for increased production is improved visibility, but this must not result in a rise in brightness which will cause eyestrain. This can be accomplished by the use of white and light grey paints, but the results are very monotonous. Lighting should be as diffused as possible. In Australia, where certain lighting standards have been mandatory since 1943, even a fluorescent source cannot be installed below the height of 14 feet without screening or diffusing. Commercial interests have brought considerable pressure for bare tube installations but the code has been retained. Brightness range should be held to a ration of 5 to 1—the amount of light reflected from the lightest area should not exceed five times that from the darkest object or area. If a light wall or ceiling reflects 75 per cent of the

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Future Benefits of Waterways Development Outlined

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From the day of the discovery of the Columbia River by Captain Robert Gray in 1792, this gigantic waterway and its tributary systems have been used and developed as the West's most natural artery of traffic. From pioneer times, the inland waters of the Pacific Nortwest have played a major role in the development and progress of the region.

First consideration, naturally enough, was the improvement of navigation on the Columbia and Snake rivers and their tributary streams. This is still of prime importance to the economic development of the interior of the Pacific Northwest. Major General Thomas M. Robins (ret.), in one of the important review reports made during his tenure as division engineer of the Corps of Engineers, stated: "Provision of low-cost water transportation between tidewater and the interior will promote the economic security and future development of agriculture and industry in the Pacific Northwest, and is more or less essential to the success of the Federal projects already undertaken with a view to construction and utilization of water resources in the Columbia Basin."

In recent times, however, there have arisen other uses for the waters of the Columbia River system which are inseparably joined with transportation—hydroelectric power, irrigation and reclamation, and flood control. For the full development of the multiple-purpose use of the water resources of the Columbia River Basin to the end that the greatest number of people will be benefited, no halfway measures are possible.

Since 1934, the Inland Empire Waterways Association has spearheaded the formulation of a program for full development of the Columbia Basin waters on an engineering and economic basis. Over the years, this association has realized many of its goals. Every project included in the original program has been authorized by the Congress of the United States—Bonneville Dam has been in operation since 1938, navigational obstructions in the river have been alleviated, McNary Dam is now nearing completion, a fishery program for the protection of the industry has been instituted, construction of the The Dalles Dam will be started next spring, and Chief Joseph Dam construction is well under way.

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Future Benefits of Waterways Development Outlined

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Multiple-purpose dams on the Snake River and further development of the Columbia River are on the association's agenda to assure complete utilization of every available drop of water for the over-all benefit to the people of the region.

It is conservatively estimated that, upon completion of the full program, the Columbia River system will produce hydroelectric power in excess of 30 million kilowatts annually. Competent studies have shown that, for each 100,000 kilowatts of new electical energy, we can expect $65 million of new industrial investment, sustaining 10,000 people in direct and 20,000 people in indirect employment. Engineers and economists have repeatedly stated that a kilowatt of power is worth $2,500 in new wealth and new job opportunities. The conclusion is astronomical—30 million kilowatts would mean new wealth of some $75 billion to the Pacific Northwest.

The history of Columbia River navigation reveals a steady increase in tonnage that has kept pace with the commercial growth of the territory served by this great waterway. Since the completion of the Bonneville Lock in 1938, the river-borne commerce for that section of the river has increased about thirteen times, to an annual total of more than 1.5 million tons. On completion of the over-all program, slack-water navigation will be available to Lewiston, Idaho, a distance of 495 miles on the Columbia and Snake. The prospective upstream and downstream traffic for the fifty-year period following the realization of these improvements is conservatively estimated at nearly 5 million tons annually.

There are approximately 4.12 million acres of once-arid land now under irrigation in the Pacific Northwest, and it is estimated that an additional 5 million acres can be irrigated under this program.

The multiple-purpose development of the Columbia Basin offers a practical solution to the yearly problem of floods. The 1948 flood caused damages estimated in excess of $100 million and took 50 lives. While floods of this magnitude are not common, the annual estimated loss from lesser general floods and some severe floods on Columbia River tributaries is $26 million. Storage reservoirs, as recommended by the Corps of Engineers and the Bureau of Reclamation, will become increasingly more valuable as the density of population increases and the utilization by agriculture and industry of the lands bordering on the streams expands.

Closely associated with full development of the Pacific Northwest is the Willamette Basin Project, authorized in 1938 in the interest of flood control, irrigation, power development, navigation, pollution abatement, and other incidental multiple-purpose uses. The over-all project includes a total of fourteen dams with storage reservoirs and three reregulating dams and reservoirs, together with channel improvements, bank protective works, navigation improvements, fish facilities, and major drainage works. Power installations eventually will be made on five main dams and three reregulating dams.

The completion of the proposed multiple-purpose dams and reservoirs on the Willamette River system will reduce flood peaks and the amount of floating debris and provide storage for releases in periods of low flows in the interest of navigation. Damage suffered in the Willamette Valley in recent years, beginning with the floods of November 1942 and extending through May 1949, has amounted to about $42 million. The January 1948 flood caused the greatest damage, $11.7 million. The Fern Ridge and Cottage Grove reservoirs, in operation in 1948, prevented about $4.6 million worth of damage.

The Willamette River Basin development, when completed, will make possible the irrigation of about 26 per cent of the arable lands on the valley floor. In addition, the increased capacity of navigation facilities will result in a stabilized annual movement of about 560 million board feet of logs, and an increase of other traffic amounting to a total average annual prospective commerce of about 2.9 million tons.

Population in the Willamette Valley has increased 54 per cent over the 1940 census. Industrial expansion has kept pace, principally because of low-cost power. The Willamette Valley subbasin has always been the major manufacturing center of the Columbia River Basin. In 1940, it produced 40 per cent of the manufactured goods of the entire basin.

The Willamette River Basin, with its present and increasing economic development, is an important unit of the Columbia River Basin, from agricultural, industrial, and commercial viewpoints. From the standpoint of navigation and power, there are definite tie-ins with the development of the Columbia River Basin.

We, in the Pacific Northwest, have long considered hydroelectric power to be unlimited. It *is* unlimited, provided additional dams and generators are made available to utilize this power. Yet the Northwest faces a critical power shortage for the next few years. Present facilities of the Bonneville Power Administration, supplying 1.5 million kilowatts of prime energy through the Pacific Northwest transmission grid system, are not sufficient to meet current demands.

Since the end of World War II, several large electroprocess industries, the operation of which would have required upwards of a half million kilowatts, have been asked to postpone establishing plants in the Northwest because their power needs could not be met. Existing factories, sawmills, and manufacturing plants have had to resort to more costly, less efficient supplemental power generation. During the low-water winter months of 1948-49, utilities were forced to shift industrial loads off the peak hours and consumers throughout the area were called upon to reduce power use. The summer drought of 1951 brought sharply into focus the question of steam-generating plants to supplement available hydroelectric power. The end of the shortage is not yet in sight.

It is an established engineering fact that the construction

of three new dams—The Dalles, Ice Harbor, and Hells Canyon—would provide 1.7 million kilowatts of added firm power. These three new dams, if integrated with existing facilities, could produce about 40 per cent of the 4.5 million kilowatts now required for the national defense program.

What about cost to the government of these facilities? From 75 to 80 per cent of the money that would be expended by the Federal government in this vast development program in the Northwest would be repaid to the Treasury with 3 per cent interest on the principal. Recent testimony by the Bureau of Reclamation before the Senate Interior Committee gave Federal expenditure by states for water conservation and control projects from 1824 to 1948. This testimony clearly showed that, for this period, 60 per cent of the money expended in the Northwest would be repaid, while in the upper Mississippi Valley states none of the money would be repaid. It showed that, in the lower Mississippi Valley states (mainly in the TVA region), some 18 per cent would be repaid and, on the Eastern seaboard, 7 per cent. From 1948 on, the rate of repayment in the Columbia Basin will be 75 to 80 per cent. We are only borrowing from the Federal government funds that will be repaid with interest.

During the first ten years of operation of the Bonneville Power Administration, all of the firm power was contracted for long in advance of its development. Revenues during that period mounted as new generators were installed, and reached a total of $157 million. After payment of all operating expenses, interest, and depreciation, a surplus of $40 million was accumulated during the first decade. This surplus was achieved with wholesale rates averaging less than one-quarter cent per kilowatt hour, the lowest in the nation. In addition, approximately three-fourths of the cost of irrigation development will be repaid from power revenues.

Columbia River power does more than pay its own way. Its low rates and widespread distribution have extended the benefits of electrification to thousands of farmers who previously had not been served at all. Among Northwest families, the use of electricity has more than doubled, and exceeds the rest of the nation by a ratio of two and one-half to one.

By the beginning of 1950, new industries directly served by the Bonneville Power Administration had invested more than $200 million in plant facilities and paid Federal and local taxes exceeding $46 million. Payrolls for these major industries reached $27 million a year and their employees numbered in excess of 7,500. The value of their products totaled approximately $925 million. More than a hundred smaller enterprises fabricated or processed the metals and chemicals of these basic industries.

The power of the Columbia River Basin is vital to the future of the Pacific Northwest. It means far more than light and motive power. In a single decade, more than a million people have migrated to this region. The region has grown in population three times as fast as the rest of the nation. In the years ahead, the Northwest must depend upon hydroelectric energy to power its industrial machine, to process logs more fully, to utilize lumber waste, to help create new synthetic wood products, to develop the vast resources of lower-grade ores, and to stimulate establishment of fabricating plants to use the enormous output of light metals now being manufactured.

Today, the Pacific Northwest has more than half the nation's reserve of phosphate rock, but is producing less than one-tenth of the fertilizers vitally needed to preserve the fertility of America's soil. Electric-furnace production of superphosphates offers a tremendous opportunity for this region.

Full multiple-purpose development of the Columbia Basin can provide power needed to create 300,000 new jobs within the next few years—opportunity for more than two million additional people. It can help reclaim arid land to build 50,000 new farms. It can curb disastrous floods. It can open a Northwest seaway to help overcome high freight rates and stimulate international trade. The development of this great inland waterway offers a pattern of decentralized industry and intensified, irrigated agriculture which can provide an increasingly high standard of living for people throughout the region.

However, it takes five years to build a dam, two years to construct and install generators or build a major transmission line. Thus, the program must be planned ahead and put into operation on schedule for the complete, full utilization of every drop of water in the quarter million square miles of the Columbia Basin for irrigation, for flood control, for navigation, and for the development of a maximum supply of dependable hydroelectric power for the continuing prosperity of all its peoples.

Industrial Color Seen as New Tool for Management

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light falling on it in an office, the darkest desk top or similar object should reflect at least 15 per cent to come within the accepted range. The American Standards Association (ASA) code calls for the following approximate reflectances: ceilings—80-85 per cent; side walls—50-60 per cent; floors (if practical)—about 30 per cent; equipment, fixtures, and furnishings—about 30 per cent. Once these standards are met with diffused illumination, there is a basis for well-chosen colors to further increase visibility and effortless sight. One of the most spectacular experiments on record is a government study in which 95 business-machine operators employed by the Public Buildings Administration in Washington cooperated with the Public Health Service over a period of two years. Three conditions were analyzed—the operators working (1) in the original room, (2) with new lighting fixtures, and (3) with the addition of color. Under the first condition, the highest brightness in the room was 1,195 foot candles; in the second it was 47; in the third there was a high of 20. The addition of new lighting reduced brightness ratios from 100:1 to 40:1—still excessive. Proper coloring reduced it to an ideal 4:7:1. Following the third step, one task improved 37.4 per cent and the average improvement was 5.5 per cent over the worker efficiency in the original room. This meant an annual saving of $13,229—really a victory of properly applied color!

In the machining of metals, brass and copper reflect a good deal of yellow, whereas steel, aluminum, and magne-

sium reflect the blue from the light falling upon them. The principle of contrast can be used by painting working areas surrounding the material being machined a color that is complementary to the color of the material. In the case of steel, if the bench or immediate background areas are painted yellow, fatigue and eyestrain are reduced, since the complementary color affords relief to the eyes. Blue adjacent areas will do the same for brass or copper work. Similarly, the sewing of blue denim with orange thread has increased output and accuracy.

Color for Identification. Color is used for purposes of identification for everything from office charts to foreign shipment of goods. It shows great promise in production control and routing. In one refinery the color of each valve or dial is repeated by a matching color spot on a large wall chart of the operation. One can see at a glance just what is controlled and where, which results in the faster training of technicans and fewer errors. The ASA pipe code is now widely used in industry to identify the type of material flowing. Color codes are also useful for stock-control systems in merchandising or manufacturing—showing at a glance desirable maximum, minimum, and normal stocks of an item. In foreign shipping, a color code enables shipments to be kept together regardless of the stevedore's lack of knowledge of the written language of the country of origin. All crates with like markings are simply kept together, which greatly simplifies tracing if one should go astray.

The writer once witnessed an accident which nicely illustrates the value of color for identification. A garage mechanic had drained a gasoline tank into an unmarked can and another worker, thinking it was water that had been drained from a radiator into a similar can, dropped in a hot casting he had been welding. The resulting explosion and fire burned two customer's cars, damaged three new ones badly, and caused considerable damage to the shop. A little green paint on the radiator cans and red paint on the gasoline containers would have minimized the likelihood of such an accident. Granted that such an accident was caused by carelessness, it still is obvious that a standard code would form habit patterns among the workers that would cut the incidence of this type of hazard.

Color for Safety. Hazards may be greatly reduced by painting them in brilliant contrast to their surroundings. Stairways, objects that may be tripped over, etc. are safer when painted a brilliant yellow or striped yellow and black. The ASA safety code has standardized color uses in an effort to promote uniform practice throughout industry. A symbol is also provided for the benefit of those who are color blind, making possible easy recognition of a safety device or hazard. The traditional meanings of most colors have been utilized in developing the code. Red is used to identify (1) fire-protection equipment and apparatus, (2) danger, and (3) stops. Yellow is used for caution and the marking of physical hazards. Green is used to designate safety devices and the location of first-aid equipment. Black and white or a combination are used for housekeeping or traffic markings.

At the Richmond, Virginia, Army Service Forces Depot, a yellow and black herring-bone stripe on posts and corners greatly reduced damage from fork trucks cutting corners. The same pattern on 4x4-inch guard rails bolted to the edge of warehouse truck platforms almost eliminated the damage from fork trucks being run off the plaforms. Power-pole guy wires provided with the striped shields practically eliminated collision hazards. The estimated saving in property damage alone at this depot has been estimated at $5,000,000 annually. A study by the Army Quartermaster Corps reports reduction of one-half in the rate of disabling injuries by such procedures. The Navy has adopted a complete new color scheme for its shore establishments, embodying the ASA safety code and the accepted color schemes utilizing twenty-six standardized colors. The shops of the New York City Transit System were painted according to the color code in 1946. In the first eighteen months the accident rate dropped 42.3 per cent for an annual saving of $500,000. The Chesapeake & Ohio Railroad is trying out color in their laboratories at Huntington, West Virginia.

Color and Apparent Distance, Temperature, Weight. At some time almost everyone has noted that the colors toward the red end of the spectrum seem warm and the ones toward the blue end cooler. It is difficult to measure these effects, in a quantitative sense, but in actual application they are often valuable. Offices can be made to appear cooler in summer or warmer in winter by merely changing the color on the walls from one that is cool to one that is warm—an apparent difference of as much as five degrees can result. The benefits in morale, as well as in heating and cooling costs, are worth serious investigation. In one steel plant, workers were required to regulate valves near the ceiling of the basement under the coke ovens. The application of a cool shade of blue to the ceiling eliminated complaints about the severity of the heat, and workmen began wearing conventional work clothing on this job.

Colors containing reds seem to "advance" or seem nearer and those containing blue to "retreat" or seem farther away than they actually are. A long narrow room or hall can be visually shortened by painting the two end walls a darker shade of an advancing color and the side walls a retreating color. Small rooms can be made to seem larger and large ones smaller by the judicious use of color, a fact know by interior decorators and artists for many years but only recently adopted by industry. Large plants with high vaultlike ceilings can be made to seem less oppressing by painting the ceilings a light shade of yellow. One restaurant chain was having trouble with lines forming in front of telephone booths. When the interiors were painted a bright red, the length of calls decreased and the lines disappeared.

For years greenhouse roofs have been painted with white water-soluble paint in summer to reflect heat and thus lower inside temperatures. In the fall the rains wash the paint off and the sun raises the temperatures inside. In industrial use the same technique on a black roof reflects sun in the summer and absorbs it in winter, with resulting simplification of heating and air-conditioning problems.

Objects painted with dark colors appear heavy and those painted lighter shades appear lighter in weight. An example in industry is the application of light green paint to black tote boxes used to carry parts from one assembly line to another. One workman remarked, "Gee, these new light-weight boxes are a lot easier to carry." Admittedly such results will defy exact measurement.

Conclusion. Three years after the completion of a color painting program in its Muncy, Pennsylvania, Wire Rope Division, the Jones & Laughlin Steel Corp. reported:

"Management believes an appreciable portion of these benefits can be credited to the color painting program:

"(1) Number of accidents that resulted in lost time was reduced by 38 per cent.

"(2) Absenteeism was reduced from about 5 per cent to less than 2 per cent.

"(3) More direct evidence of an improvement in employee morale was a reduction in labor turnover from 4.5 to 0.4 per cent.

"(4) Most telling evidence of the value of the program, however, was in increase in machine efficiency from 86 to 96 per cent. The company believes the use of functional and restful colors among complicated whirling machinery helped make this possible through a reduction in operator fatigue caused by nervous tension and eyestrain.

"(5) Housekeeping benefitted, too. Plant clean-up problems were simplified because employees were taking greater pride in the appearance of their machines and were more interested in the cleanliness of their work areas.

"(6) An indirect benefit was the improved see-ability of workers, gained from more efficient utilization of existing lighting facilities.

"As a natural result of the foregoing benefits, production improved both in quantity and quality, leading to increased product sales."

At the present time a two-year study of the entire field of color in industry is under way at the Johns Hopkins University. When the results are evaluated and released, much more information will be available for the application of industrial color.

Formerly there may have been some doubt whether improvement of the working environment had any effect upon workers. Experience has, however, unquestionably proved that it affects both worker morale and, ultimately, output. Some of the benefits obtained may result from the mere fact that a *change* was made, indicating to the workers that management was interested in *them* and *their* working conditions. None the less, the fact remains that such a painting program costs no more than the conventional one and any additional benefits are pure profits!

1951 Third-Quarter Income and Corporate Profits Reported

Corporate profits before taxes in the United States were reduced to the seasonally adjusted annual rate of $40 billion in the third quarter of last year, according to preliminary estimates of the Office of Business Economics. This represented a decline of $5.5 billion from the second quarter and almost $6 billion from the third quarter of 1950. Profits in the third quarter thus dropped substantially below the peak annual rate of over $50 billion obtaining at the turn of the year. None the less, the total remained well above any previous quarter through the first half of 1950.

Third-quarter profits after taxes were the lowest since the third quarter of 1946. The third-quarter 1951 rate of $16 billion may be compared with $18.5 billion in the second and $20.5 billion in the first. These figures reflect combined Federal and state corporate profits tax liability at a rate of almost 60 per cent, as compared with a rate of 45 per cent in 1950.

Sales by the corporate business system were only moderately lower in the third quarter than in the second. The main factor in the fall of profits was a reduction in margin —that is, the ratio of profits to sales.

On an over-all basis, a very substantial part of the margin decline stemmed from the inventory accounting methods in general business use. The predominant practice is to charge inventory goods to cost of sales in terms of prior-period prices, rather than current replacement prices. This has the effect of including in the reported "book" profit figures an inventory profit or loss—the difference between the current replacement and book cost of inventories used up in production. In the third quarter, inventory losses amounted to almost $3 billion, as opposed to inventory profits of over $2 billion in the second quarter. This swing of over $5 billion was reflected in substantially lowered book profits and profit margins in the third quarter.

The inventory valuation adjustment employed in national income accounting is designed to eliminate inventory profit or loss, and thus provides a measure of profits earned in current production. Profits before taxes adjusted for inventory valuation remained virtually unchanged from the fourth quarter of 1950 through the first three quarters of last year, at a level substantially above earnings in all previous quarters.

The expansion in national income was retarded after the first quarter of 1951. Third-quarter national income was at the annual rate of $278 billion, $3.5 billion above the preceding quarter, as compared to a $5 billion rise in the second quarter and much larger increments during the earlier quarters of the mobilization period.

The various income shares participated disproportionately in the third-quarter rise in national income. Of the total advance of $3.5 billion, over four-fifths was due to a rise in employee compensation, reflecting primarily the further advance in military and defense-related payrolls of the government. Farm proprietors' income also expanded sizeably ($1 billion, or 6 per cent). The remaining shares —income of nonfarm business proprietors, rental income of persons, corporate profits adjusted for inventory valuation, and net interest—did not change significantly from the second quarter to the third.

These developments were generally in line with changes during the preceding half year. However, the contribution of private-industry payrolls to the increase in total payrolls was larger in the earlier period.—*Survey of Current Business*, Jan. 1952.

CURRENT BUSINESS TRENDS IN OREGON

Lumber. All lumber production records for the Douglas-fir region were broken by an output of 11.2 billion board feet in 1951. This compares with 10.7 billion board feet in 1950, the previous high. Other high years were 1926 and 1929 with 10.3 billion board feet each. The most recent statistics for the industry as prepared by the West Coast Lumbermen's Association are as follows (thousands of feet, board measure):

	Dec. 1951	*Nov. 1951*	*Dec. 1950*
Average weekly production	180,283	209,237	198,933
Average weekly orders	181,939	178,484	224,871
Average weekly shipments	163,117	207,935	194,975

CURRENT BUSINESS TRENDS IN OREGON

Employment. During the first part of January 1952 the number of unemployment-compensation claimants in Oregon was materially in excess of the same period last year, but less than two years ago. The State Unemployment Compensation Commission does not yet have data for the entire month, but there seems to be no reason for assuming that the situation was reversed during the latter part of the month. Most of the new unemployment came from the western fir area. Eugene, Roseburg, and Lebanon reported the most abrupt rises.

Record employment in trade, service, government, metals, machinery, and ship repairing before the year-end holidays held the number of nonfarm jobs at the highest December level ever reported. Lumber and logging, food processing, construction, and transporation dropped sharply from November and were slightly lower than a year before. Preliminary tabulations show 448,400 employed in nonagricultural occupations in December 1951 and 454,400 in November 1951.

Portland-Department Store Sales. Although sales of Portland department stores ran 6 per cent ahead of last year in the week before Christmas (possibly a result of staying open every evening), comparisons of January 1952 with last January have not been favorable, perhaps because of adverse weather conditions. The figures below show the most recent percentage changes in Portland and other Pacific Coast cities.

	Week Ending Jan. 19, 1952	*4 Weeks Ending Jan. 19, 1952*	*Fiscal Year to Jan. 19, 1952*
Portland	− 9	−19	− 3
Los Angeles	−25	−15	− 2
San Diego	−12	−14	+ 2
Oakland	−15	−11	0
San Francisco	− 7	− 3	+ 3
Seattle	−11	− 9	+ 1
Spokane	−14	− 9	+ 4
United States	−14	−10	-

The department-store sales figures are collected by the Federal Reserve Bank of San Francisco. The dollar sales are released in the form of index numbers as well as in the form of comparisons with the previous year, as shown above. The most recent seasonally adjusted compilation of Portland and Pacific Northwest department-store indexes follow (1947-1949 daily average=100):

	Portland	*Pacific Northwest*
November	106	114
October	104	113
September	101	109
August	103	109
July	103	109
June	99	107

Multnomah County Real-Estate Transactions. During December 1951 there were 859 real-estate transactions amounting to $8,042,098 in Multnomah County. Of these, 641 involved residences, the total sales price of which was $5,860,997; 199 were vacant properties, $402,397; and 19 were business properties, $1,778,704. Additional figures are:

	Dec. 1951	*Nov. 1951*	*Dec. 1950*
Number of sales	859	1,083	1,132
Total value of sales	$8,042,098	$9,636,703	$8,998,159
Number of mortgages	873	1,049	994
Total amount loaned	$7,128,820	$6,790,851	$6,688,000
Average residential sales price	$ 9,144	$ 9,602	.....

Bank Loans and Deposits. Loan-and-deposit figures of Oregon Federal Reserve member banks (all national banks and many state banks) as of the last Wednesday in each month for Dec. 1951, Nov. 1951, and Dec. 1950 are shown below in millions of dollars.

	Dec. 26, 1951	*Nov. 28, 1951*	*Dec. 27, 1950*
Loans	$ 528	$ 540	$ 479
Deposits	1,351	1,366	1,291

BANK DEBITS

Bank debits represent the dollar value of the checks drawn against individual deposits. Payment for approximately 90 per cent of all goods, property, and services is by check. Bank debits are regarded as indicators of the general trend of business, though their value for this purpose may be impaired by substantial changes in the level of prices. The Bureau of Business Research collects bank debits from 122 banks and branches monthly. On occasion, the totals for the same month in different issues of the *Review* are not directly comparable because of necessary adjustments in basic data.

Marketing Districts	*Number of Banks Reporting*	*Debits Nov. 1951*	*Debits Oct. 1951*	*Debits Nov. 1950*	*Nov. 1951 Compared with Oct. 1951*	*Nov. 1951 Compared with Nov. 1950*
Oregon	110	$1,292,951,776	$1,318,181,882	$1,153,317,341	− 1.9	+12.1
Portland (Portland, Hillsboro, Oregon City, etc.)	30	810,576,321	802,726,167	718,924,875	+ 1.0	+12.7
Lower Willamette Valley (Salem, McMinnville, etc.)	15	95,451,972	105,660,861	84,393,896	− 9.7	+13.1
Upper Willamette Valley (Albany, Corvallis, Eugene, etc.)	16	120,648,545	126,960,426	111,992,711	− 5.0	+ 7.7
North Oregon Coast (Astoria, Tillamook, etc.)	4	20,807,141	21,696,873	18,033,306	− 4.1	+15.4
Douglas, Coos Bay	7	36,271,016	47,015,939	34,696,595	−22.9	+ 4.5
Southern Oregon (Ashland, Medford, Grants Pass)	6	54,071,572	54,595,951	49,397,241	− 1.0	+ 9.5
Upper Columbia River (The Dalles, Hood River, etc.)	7	23,133,563	24,346,944	21,500,170	− 5.0	+ 7.6
Pendleton area	4	22,236,615	22,730,382	20,432,599	− 2.2	+ 8.8
Central Oregon (Bend, Prineville, Redmond)	5	25,056,928	26,489,540	24,011,409	− 5.4	+ 4.4
Klamath Falls, Lakeview area	5	34,997,465	38,386,823	24,149,004	− 8.8	+44.9
Baker, La Grande area	6	26,015,379	26,690,600	25,332,714	− 2.5	+ 2.7
Burns, Ontario, Nyssa	5	23,685,259	20,881,376	20,452,821	+13.4	+15.8

BUILDING PERMITS

Building permits give an indication of building operations planned rather than actual construction under way. Care must be taken, in interpreting these data, to allow for the lag which may elapse between the issuance of the permit and the beginning of actual construction. The data have been collected by the Bureau of Business Research.

	New Residential Nov. 1951	*New Non-residential Nov. 1951*	*Additions, Alterations & Repairs Nov. 1951*	*Totals Nov. 1951*	*Totals Oct. 1951*	*Totals Nov. 1950*
Astoria	$ 1,000	$ 2,500	$ 11,782	$ 15,282	$ 24,889	$ 82,476
Baker	19,800	250	4,750	24,800	13,965	19,900
Bend	24,300	2,600	19,040	45,940	67,580	98,053
Coos Bay	50,480	5,000	8,585	64,065	39,167	10,250
Corvallis	73,550	3,075	3,110	79,735	67,999	117,185
Eugene	123,500	17,100	32,073	172,673	167,252	256,625
Grants Pass	73,582	16,710	33,054	123,346	83,680	130,319
Klamath Falls	9,000	0	4,350	13,350	70,880	173,450
La Grande	9,000	1,300	3,665	13,965	29,730	44,185
Medford	104,100	82,400	9,995	196,495	145,235	478,897
North Bend	20,000	6,650	8,515	35,165	58,640	12,150
Oregon City	8,000	6,450	3,300	17,750	18,920	24,900
Pendleton	21,800	0	20,400	42,200	74,040	61,570
Portland	1,155,025	166,015	351,730	1,672,770	2,652,110	5,154,370
Roseburg	25,000	4,750	20,880	50,630	66,710	146,300
Springfield	59,750	3,350	11,350	74,450	106,325	488,850
The Dalles	70,000	101,500	13,675	185,175	132,210	246,900
19 other communities	212,850	62,725	65,755	341,330	327,770	418,688
Total	$2,060,737	$ 482,375	$ 626,009	$3,169,121	$4,147,102	$7,965,068

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